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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/588,229	06/06/2000	Kazuhiro Kawashiri	P107317-00005	1010
7590 12/05/2003 Arent Fox Kintner Plotkin & Kahn PLLC 1050 Connecticut Avenue N W Suite 600 Washington, DC 20036-5339			EXAMINER LONG, HEATHER R	
			ART UNIT 2615	PAPER NUMBER 3

DATE MAILED: 12/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/588,229

Applicant(s)

KAWASHIRI, KAZUHIRO

Examiner

Heather R Long

Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 June 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tatsumi (U.S. Patent 5,745,262) and in view of Morishita et al. (U.S. Patent 4,007,488).

Regarding claim 1, Tatsumi discloses a control method for a solid state image pickup device having a plurality of photoelectric conversion elements, the control method comprising: a preliminary trial image pickup step of making the plurality type of photoelectric conversion elements generate and accumulate electric charges during a predetermined charge accumulation time and detecting a charge amount corresponding to an intensity of light of each color; a calculation step of calculating a charge accumulation time of photosensitive conversion elements to obtain a good white balance, in accordance with the charge amount corresponding to the intensity of light of each color detected by the preliminary trial image pickup step; and a final image pickup step of controlling the charge accumulation time of photosensitive conversion elements

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independently for each color by using the electronic shutter and read-out of electric charges from the photoelectric conversion elements to the charge transfer paths read-out region, in accordance with the calculated charge accumulation time, and making the plurality type of photoelectric conversion elements generate and accumulate electric charges (col. 3, line 48 to col. 4, line 24; col. 6, lines 23-25; and col. 7, lines 16-22).

However, Tatsumi is lacking the teachings of independently controlling the accumulation time for each color and the use of a mechanical shutter along with an electronic shutter. However, Official Notice is taken that both the concept and the advantages of using a mechanical shutter along with an electronic shutter is well known and expected in the art. Therefore, it would have been obvious to use a mechanical shutter as well as an electronic shutter in order to allow a high-speed successive photographing mode at a lower cost.

Referring to the Morishita et al. reference, Morishita et al. discloses in Fig. 1 a control method for a solid state image pickup device that controls the charge accumulation time of photosensitive conversion elements independently for each color (col. 1, lines 43-50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the teachings of Morishita et al. with the control method for a solid state image pickup device as disclosed by Tatsumi in order to provide a solid state image pickup device that allows the color components of the incident light to be balanced in terms of the output signal level.

Regarding claim 6, Tatsumi discloses a solid state image pickup device comprising: an electronic shutter for clearing electric charges in the plurality type of photoelectric conversion elements; preliminary trial image pickup means for making the plurality type of photoelectric conversion elements generate and accumulate electric charges during a predetermined charge accumulation time and detecting a charge amount corresponding to an intensity of light of each color; calculation mean for calculating a charge accumulation time of photoelectric conversion elements independently for each color so as to obtain a good white balance; and final image pickup means for controlling the charge accumulation time of photoelectric conversion elements by using the electronic shutter and read-out electric charges from the photoelectric conversion elements to the vertical charge transfer paths, in accordance with the calculated charge accumulation times, and making the plurality type of photoelectric conversion elements generate and accumulate electric charges(col. 3, line 48 to col. 4, line 24; col. 6, lines 23-25; and col. 7, lines 16-22). Tatsumi is lacking the teachings of controlling the accumulation times of independently for each color along with the details of what a color solid state image pickup image device consists of. However, Official Notice is taken that both the concept and the advantages of using a color solid state image pickup device comprising: a plurality of photoelectric conversion elements for converting light of each of red, green, and blue colors into electric charges, the photoelectric conversion elements being disposed in vertical and horizontal directions in a two-dimensional plane; vertical charge transfer paths for transferring electric charges in the vertical direction; read gates for reading electric charges from the

photoelectric conversion elements to the vertical charge transfer paths; a horizontal charge transfer path for transferring electric charges transferred from the vertical charge transfer paths in the horizontal direction is well known and expected in the art.

Therefore, it would have been obvious to use a color solid state image pickup device that comprised a plurality type of photoelectric conversion elements, vertical charge transfer paths; read gates; and a horizontal charge transfer path in order to allow the solid state image pickup device to accumulate charges and to readout those charges.

Referring to the Morishita et al. reference, Morishita et al. discloses in Fig. 1 a control method for a solid state image pickup device that controls the charge accumulation time of photosensitive conversion elements independently for each color (col. 1, lines 43-50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the teachings of Morishita et al. with the control method for a solid state image pickup device as disclosed by Tatsumi in order to provide a solid state image pickup device that allows the color components of the incident light to be balanced in terms of the output signal level.

4. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tatsumi in view of Morishita et al. as applied to claim 1 above, and further in view of Tani (U.S. Patent 5,187,569).

Regarding claim 2, Tatsumi in view of Morishita et al. discloses a control method for a solid state image pickup device wherein the solid state image pickup device further comprises charge transfer paths including the charge read-out region for transferring

electronic charges in the photoelectric conversion elements, the plurality type of photoelectric conversion elements are capable of converting light of at least first to third colors into electronic charges, and the final image pickup step comprises the steps of: starting a first charge accumulation time for the first color by the electronic shutter; reading electric charges from the photoelectric conversion elements of the first color to the charge transfer paths to terminate the first charge accumulation time of the first color; starting a second charge accumulation time for the first color, a charge accumulation time for the second color and a charge accumulation time for the third color by the electronic shutter; and reading electric charges from the photoelectric conversion elements of the third color to the charge transfer paths to terminate the charge accumulation time for the third color (Figs 5A-5F in Morishita et al.). However, Tatsumi in view of Morishita et al. lacks the teachings of the mechanical shutter closing to terminate the charge accumulation time for the first color and the charge accumulation time for the second color and the charge accumulation time for the second color.

Referring to the Tani reference, Tani discloses in Figs. 5A-5i a control method for a solid state image pickup device that further comprises a mechanical shutter that when closed terminates the charge accumulation time for the first color and the charge accumulation time for the second color.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the teachings of Tatsumi in view of Morishita et al. with Tani in order to have provided a solid state image pickup device

that controls all the charge accumulation times of all the colors independently with an electronic shutter, and terminate the charge accumulation time by closing the mechanical shutter.

Regarding claim 3, Tatsumi in view of Morishita et al. discloses a control method for a solid state image pickup device further comprising the steps of: reading electric charges from the photoelectric conversion elements of the first color to the charge transfer paths; transferring the electric charges for the first and third colors on the charge transfer paths; reading electronic charges from the photoelectric conversion elements of the second color to the charge transfer paths; and transferring the electric charges for the second color on the charge transfer paths (Figs 5A-5F in Morishita et al.).

5. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tatsumi in view of Morishita et al. as applied to claim 1 above, and further in view of Tani (U.S. Patent 5,187,569) and Nakamura (U.S. 5,105,269).

Regarding claim 4, Tatsumi in view of Morishita et al. discloses a control method for a solid state image pickup device wherein the final image pickup step comprises the steps of: starting a first charge accumulation time of the first color by the electronic shutter (Morishita et al., Figs 5A-5F). However, Tatsumi in view of Morishita et al. is lacking the teachings of reading unnecessary electric charges and the use of a mechanical shutter to terminate the charge accumulation times.

Referring to the Tani reference, Tani discloses in Figs. 5A-5i a control method for a solid state image pickup device that further comprises a mechanical shutter that when

closed terminates the charge accumulation time for the first, second, and third charge accumulation times.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the teachings of Tatsumi in view of Morishita et al. with Tani in order to have provided a solid state image pickup device that controls all the charge accumulation times of all the colors independently with an electronic shutter, and terminate the charge accumulation time by closing the mechanical shutter. However, Tatsumi in view of Morishita et al. in view of Tani is still lacking the teachings of reading unnecessary charges.

Referring to the Nakamura et al. reference, Nakamura et al. discloses in Figs. 35 to 38 a solid state image pickup device wherein the unnecessary charges are read out before accumulation starts again.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the teachings of Nakamura et al. with Tatsumi in view of Morishita et al. in view of Tani in order to provide a solid state image pickup device that reads out the unnecessary charges before accumulation starts again in order to dispose of any unwanted charges.

Regarding claim 5, Tatsumi in view of Morishita et al. discloses a control method for a solid state image pickup device further comprising the steps of: reading electric charges of the first and third colors to the charge transfer paths; transferring the electric charges for the first and third colors on the charge transfer paths; reading electric charges from the photoelectric conversion elements of the second color to the charge

transfer paths; and transferring the electric charges for the second color on the charge transfer paths (Morishita et al., Figs 5A-5F). However, Tatsumi in view of Morishita et al. is lacking the teachings of draining unnecessary charges.

Referring to the Nakamura et al. reference, Nakamura et al. discloses in Figs. 35 to 38 a solid state image pickup device wherein the unnecessary charges are read out before accumulation starts again.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the teachings of Nakamura et al. with Tatsumi in view of Morishita et al. in order to provide a solid state image pickup device that reads out the unnecessary charges before accumulation starts again in order to dispose of any unwanted charges.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Elabd (U.S. Patent 5,754,229) discloses a solid state image pickup device that comprises: a plurality of photoelectric conversion elements for converting light of each of red, green, and blue colors into electric charges, the photoelectric conversion elements being disposed in vertical and horizontal directions in a two-dimensional plane; vertical charge transfer paths for transferring electric charges in the vertical direction; read gates for reading electric charges from the photoelectric conversion elements to the vertical charge transfer paths; a

horizontal charge transfer path for transferring electric charges transferred from the vertical charge transfer paths in the horizontal direction.

b. Hirama (U.S. Patent 6,002, 497) discloses a linear sensor that independently controls the charge accumulation times for each color.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Heather R Long whose telephone number is 703-305-0681. The examiner can normally be reached on Mon. - Thurs.: 7:00 am - 4:30 pm, and every other Fri.: 7:00 am - 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Christensen can be reached on (703) 308-9644. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

hrl
November 17, 2003



NGOC-YEN VU
PRIMARY EXAMINER